

**REMARKS**

Currently, claims 1-14, 16-20, 25-31, 33-34, 56-57, 67-68, 92-93, 95 and 115-116 are pending and under examination. Claims 35-55, 58-66, 69-91, 96-114 are withdrawn from further consideration.

Applicants have carefully considered the points raised in the Final Office Action and believe that the Examiner's concerns have been addressed as described herein, thereby placing this case into condition for allowance.

**Rejection under 35 U.S.C. §103**

Claims 1-2, 5, 116 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Chan et al (US 5120662), Tiffany et al. (US 5508200), or Liotta et al. (US 5942407) in view of Dames et al. (WO 00/16893).

Claims 1-6, 11, 16-20, 25-29, 31, 33-34, 56-57, 67-68, 92, 95, 115, 116 are rejected under 35 U.S.C. 102(e) as allegedly being unpatentable by Cattell (US 6180351) in view of Dames et al.

Claims 7-10 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Cattell.

Claims 12-14, 30 and 93 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Cattell in view of Zhou et al. (WO 0054882).

In the previous July 21, 2004 Amendment, Applicant argued that the combination of Dames et al. reference with the primary references cited in the previous Office Action, such as Chan et al (US 5120662), Tiffany et al. (US 5508200), or Liotta et al. (US 5942407), would result in a

change in the basic principle which the Dames et al's devices were to operate. Particularly, the micro fabricated labels taught by Dames et al. having a surface layer of anodized metal, whereas the instant invention, in contrast, having a feature of the photorecognizable coding pattern does not comprise an anodized metal surface layer (See Remarks and Arguments, page 24, second paragraph). Therefore, the combination of the recited references by Examiner would not be permissible to arrive to the claimed invention.

The Examiner maintained the obviousness rejection. According to the Examiner:

Examiner had established that all the Chan, Tiffany, or Liotta et al. having features recited in independent claim 1, including substrate, photorecognizable code pattern on the substrate and binding partners. The mere deficiency for those references rendering obviousness to the claimed invention lie on the feature of "said photorecognizable coding pattern comprises a hole not penetrating through the entire depth of said substrate and said micro device does not comprise an anodized metal surface." Although Dames et al. reference has a feature seemingly contrasting to the instant invention, i.e. the labels with a surface layer of anodized metal, nonetheless this would not deemed an impermissible combination as alleged by the applicant. Examiner would like to draw applicant's attention that the purpose of using anodizing metal surface is for "attachment of a wide range of biochemically active agents for use as highly selective probe" (See Dames et al. reference, page 2, line 26-30). The anodized surface is not for detection purpose rather it is for attracting biological molecules with negative surface charge. The references of Chan, Tiffany, or Liotta et al. already provided binding moiety for the attachment of target molecule in interest, it is the combination of optical photorecognizable feature taught by Dames et al render[sic] the instant invention obvious because the advantage of cost-effective, time-saving and analogous field of need.

(September 30, 2004 Final Office Action at pages 6-7.)

This rejection is respectfully traversed. The Examiner relied on Dames to teach the limitation “photorecognizable coding pattern comprising a hole not penetrating through the entire of said substrate.” The Examiner, however, disregarded the Dames’ requirement that its “microfabricated labels have a surface layer of anodised metal.” The Examiner’s disregard of the requisite “surface layer of anodised metal” contradicted to the Examiner’s reasoning for motivation to combine Dames with other cited references.

According to the Examiner, the motivation to combine Dames with other cited references lies in the low-cost and convenient features of Dames’ microfabricated labels. (September 30, 2004 Final Office Action at pages 4, 5 and 7; and March 22, 2004 Office Action at pages 4 and 6.) The Examiner cited page 2, lines 13-15 of Dames for the alleged low-cost and convenient features. Dames states:

This invention describes a system for carrying out massively parallel multiple bioassays tests in a low-cost, fast and convenient manner. The scheme involves making a suspension (an assay) containing many thousands of different types of micro-machined coded labels, (micro-labels), each code carrying a different biochemical test or probe.

(Dames at page 2, lines 14-17; emphasis added.) Dames also states:

The micro-labels are fabricated from an anodisable material such as aluminium, initially deposited onto a planar substrate with a soluble release layer. The metal surface is anodized before patterning. This allows the attachment of a wide range of biochemically active agents for use as highly selective probes.

(Dames at page 2, lines 27-30; emphasis added.)

Therefore, according to Dames, its low-cost and convenient features is based on an assay system using many thousands of different types of micro-machined coded labels, each code carrying a different biochemical test or probe. Also according to Dames, it is the use of its “surface layer of anodised metal” that “allows the attachment of a wide range of biochemically active agents for use as highly selective probes.” In other words, the use of its “surface layer of anodised metal” is the main, if not the sole, contributing factor to the Dames’ low-cost and convenient features. In the past, the Examiner also relied on claims 14-19 of Dames as a support for the low-cost and convenient features. Claims 14-19 of Dames all depend claim 1, which explicitly requires “an anodised metal layer.” (Dames at page 9.) The Examiner cannot, on the one hand, relies on the low-cost and convenient features as a motivation to combine Dames with the other cited references, and on the other hand, disregards Dames’ requirement of “an anodised metal layer,” which is the foundation for Dames’ low-cost and convenient features.

In determining the obviousness issue, a prior art reference must be considered in its entirety, *i.e.*, as a whole, including portions that would lead away from the claimed invention. MPEP 2141.02 *citing W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). As discussed above, Dames consistently requires “an anodised metal layer” for its microfabricated labels. The skilled artisan would not be motivated to combine Dames with other references to arrive at the presently claimed invention, which explicitly requires the absence of “an anodised metal layer.”

It is a well established principle that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). In *In re Ratti*, the claims in suit were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a

resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casting. The reference taught the device required rigidity for operation, whereas the claimed invention required resiliency. The Court reversed the rejection holding the “suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.” 270 F.2d at 813, 123 USPQ at 352.

Dames teaches a system for carrying out parallel bioassays. Microfabricated labels are made to each carry a biochemical test, many different labels are mixed together with an analyte sample. A device that reads the individual labels isolates the results of the individual tests. The microfabricated labels have a surface layer of anodized metal. (Dames at page 2, lines 27-30, and claim 1.) The binding reactions to be tested by Dames’ systems involve protein bindings. (See Dames at page 4, lines 10-12.) According to Dames, having a surface layer of anodized metal is important for its test systems:

Proteins bind only weakly with an untreated aluminium surface when incubated in an aqueous solution. By modifying the surface this binding can be selectively enhanced to control when the binding occurs. This is important because it allows the probe molecules to be bound strongly to the surface at time of manufacture whilst maintaining weak non-specific binding of the fluorescent target molecules during the test. In this way the discrimination of the tests is maximized.

(See Dames at page 6, lines 6-11; emphasis added.) Therefore, Dames relies on “an anodised metal layer” to enhance protein binding to the surface and to maximize the discriminating effect of its tests. In maintaining the obviousness rejection, the Examiner relied on teaching of binding partners

from other cited references for attaching the target molecules. However, this would require a change in the basic principle under which the Dames' devices were designed to operate, *i.e.*, from relying on the "anodised metal layer" to relying on the additional binding partners for selectively binding the target molecules. In addition, as discussed above, the change from relying on the surface property itself to relying on additional binding partners would take away Dames' low-cost and convenient features.

Indeed, with Dames' reliance on the "anodised metal layer" for its low-cost and convenient features, Dames, at least implicitly, teaches away from any microdevices not having "an anodised metal layer." It is improper to combine references where the references teach away from their combination. MPEP 2145 citing *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983) (The claimed catalyst which contained both iron and an alkali metal was not suggested by the combination of a reference which taught the interchangeability of antimony and alkali metal with the same beneficial result, combined with a reference expressly excluding antimony from, and adding iron to, a catalyst.). Therefore, it is improper to combine Dames with other cited references to arrive at the presently claimed microdevices that explicitly does not allow the "anodised metal layer."

The above response applies to the rejections of claims 1-2, 5 and 116 over Chan et al (US 5120662), Tiffany et al. (US 5508200), or Liotta et al. (US 5942407) in view of Dames et al. (WO 00/16893), and the rejections of claims 1-6, 11, 16-20, 25-29, 31, 33-34, 56-57, 67-68, 92, 95, 115 and 116 over Cattell (US 6180351) in view of Dames et al.

As to the rejections of claims 7-10 over Cattell, and the rejections of claims 12-14, 30 and 93 over Cattell in view of Zhou et al. (WO 0054882), it is respectfully submitted that neither Cattell nor Zhou teaches the limitation "said photorecognizable coding pattern comprises a hole not

penetrating through the entire depth of said substrate.” If the above rejections were made in view of Dames, the above response in connection with Dames also applies to these rejections.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. §103.

### CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 471842000500. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

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